

REMARKS

Claims 1 - 25 are in this application and are presented for consideration. By this Amendment, Applicant has revised several of the claims amended or presented by the Preliminary Amendment. Additionally, new claims 21 - 25 have been added.

Claim 9 has been rejected as being indefinite. Applicant has now revised the claim to overcome this rejection. Favorable reconsideration of the claim is requested.

Claims 1 - 6, 8 - 17 and 19 - 20 have been rejected as being obvious based on the teachings of Bublies et al. (U.S. 6,129,367) in view of Olley (U.S. 2,300,844). The rejection is based on the position that providing a spring assembly as in Olley in combination with the teachings of Bublies suggests the invention. It is Applicant's position that the invention includes cooperating features which are not suggested by the references.

The Bublies reference discloses an axle suspension for a rigid axle in a vehicle. The axle 1 is connected to the vehicle body by longitudinal control arms 2 and 3. These are at a considerable distance from the longitudinal center of the vehicle and are provided on both sides of the vehicle. Joint connections of the longitudinal control arms 2 and 3 are located under the vehicle axle 1 (see Fig. 1). A four-point torsional connecting element 4 is arranged above the vehicle axle 1 in the middle of the vehicle. The connecting element 4 has two stable arms 9 and 10 which can be fastened to the vehicle body via body joints 5 and 6 and which are fastened with axle joints 7 and 8 to the vehicle axle (this is referred to at column 5 line 34 through column 6 line 3 of Bublies et al.). All joint connections taught by Bublies et al. are designed as cardanically movable connections and consist of molecular joints with an elastomer 13 arranged

between a joint housing 14 and a ball piece 15 (see column 5, lines 55 - 54 of Bublies et al.).

Olley (U.S. 2,300,844) discloses a vehicle having a vehicle frame. A rear axle housing 1 is guided in its movements relative to the vehicle frame. The frame includes side members 4 and 5 and a cross member 6. The guidance is via a pair of upper links 7 and 8 and a pair of lower links 9 and 10 (see page 1 column 2, lines 21 - 26). The lower links are parallel as shown in the plan view (see page 1 column 2 lines 43 - 44 of Olley). The lower links are provided with spring seats 25 and 26 for coil springs 27 and 28. The springs 27 and 28 are provided between the links and the side members 4 and 5 of the vehicle frame (as described at page 1 column 2 line 51 - 54). Additionally, shock absorbers 31 and 32 are mounted on the side frames 4 and 5 respectively. The pivotal connections such as pivots 17, 18, 21 and 22 as well as 67 and 71 are of a general form. These connections include a stationary pivot pin such as 97 which is suitably secured to the frame or axle via a resilient bushing 98 of rubber or the like. This is in compression between the pivot pin and the link which is pivoted thereon. This allows a desirable degree of universal movement as discussed at page 2 column 1 line 75 to column 2 line 10 of Olley. Reference is also made to claim 17 and 18 of Olley. According to another embodiment disclosed in Olley the lower links 59 are slightly convergent from their pivotal connections on the vehicle frame (see page 2 column 1 lines 34 - 37 of Olley).

The teachings of Bublies and Olley do not direct the person of ordinary skill in the art toward the combination of structural features claimed. The subject matter of claim 1 includes a four-point twistable connection connected to axle joints and vehicle body joints as well as axle struts wherein the axle struts extend beyond the articulation point to the end of the axle strut,

(beyond the connection of the axle strut to the vehicle axle). This provides free ends not articulated to the vehicle body. This structure is provided in combination with the spring assembly units. This combination of features is clearly neither taught nor suggested by Bublies et al. or Olley. As such the references provide no motivation or incentive to make changes to reach the combination as claimed. Further, the combination provides significant advantages which are not suggested by the prior art as a whole. The structure of claims 1 and claims dependent thereon provides a solution which optimizes the dynamics of the vehicle movement and achieves reduced vibrations and reduced wear while having better lateral rigidity of the axle. The arrangement also is simple in its combination of parts.

Applicant's claim 11 highlights the combination of features of the invention as originally presented and also highlights the provision of a further spring assembly, beyond the two spring assemblies provided. This further spring assembly or further spring assemblies can be in the form of one or two additional spring assemblies or some other variant. This combination presents important advantages as compared to the prior art including Bublies et al.. Further additional spring assemblies or spring elements or units are not at all suggested by Bublies et al. either alone or in combination with Olley. The Bublies et al. arrangement fails to provide significant teachings with regard to the provision of spring assemblies. The arrangement of Olley et al. does not at all lend itself to a three or more spring assembly arrangement as according to Applicant's claim 11. This use of one or more additional spring assemblies in combination with the four-point connecting rod arrangement with the vehicle body and vehicle axle structure as well as the provision of the first and second axle struts with the spring

assembly units arranged between the vehicle axle and the vehicle body presents the advantages over the teachings of Bublies and others including Olley. The present invention provides significantly optimized dynamics of vehicle movement, reduced vibrations, reduced wear and very good lateral rigidity of the axle construction. This is clearly not suggested by Bublies who as pointed out provides no significant teachings of use of shock units. The teachings of Olley are limited based on a spring and shock mount located centrally thereby providing no significant suggestion of a distributed spring assembly arrangement. Accordingly, Applicant respectfully requests that the Examiner favorably reconsider revised claim 11 and claims dependent thereon.

New claim 21 highlights the combination of features including the four-point connection to vehicle axle and vehicle body as well as first and second axle struts cooperating with a spring assembly and molecular joints providing the connection of the axle struts to the vehicle frame. This is also provided in combination with an orientation of the axle struts 11 and 12 such that their direction extends toward the middle of the vehicle from their front articulation by means of the joints 13 and 14, toward the end of the vehicle when viewed from the top. This is discussed for example at page 8 last paragraph of the application text.

The prior art including Olley fail to teach this combination of features. In Olley the lower links 59 converge in the opposite direction. This provides a teaching away from the features claimed. Further, the arrangement as highlighted in claim 21 presents significant advantages with regard to optimizing the dynamics of the vehicle movement and reducing vibrations, wear and increasing lateral rigidity of the axle construction. The invention provides a combination which is not suggested by any of the references and which achieves desirable

aspects which are not suggested by the references as a whole. Accordingly, favorable consideration of new claim 21 is requested.

Claim 22 highlights the combination of features including the four-point connection to the vehicle axle and the vehicle body as well as axle struts with molecular connections to the vehicle and extending to connections with the axle, as well as a spring assembly between the axle and the spring suspension. In addition claim 22 highlights the arrangement of spring assemblies behind the vehicle axle 3. That is, with regard to the direction of travel the spring assembly is arranged between each axles strut respectively and the vehicle body and disposed rearwardly or behind the axle. This presents significant advantages with regard to achieving the object of the invention of optimizing dynamics of vehicle movement and reducing vibrations and wear and increasing lateral rigidity of the axle construction. The arrangement is further clearly neither taught nor suggested by the prior art including Bublies et al. and Olley. Olley clearly directs the person of ordinary skill in the art toward coil springs 27 and 28 arranged in front of the axle or in the embodiment of Fig. 4 coil springs are arranged on or at the location of the axle and not on the lower link 59. In each case the arrangement is significantly different from the arrangement claimed. The prior art as a whole fails to suggest the structural arrangement as claimed and fails to suggest the advantages of the combination as claimed.

New claim 23 further highlights the advantages of the arrangement including the provision of spring assembly units arranged both in front of and behind the vehicle axle 3. Specifically in claim 23 the structure of the invention with two forward springs and two rear springs provides a significantly improved kinematic condition to the overall dynamics of vehicle

movement as well as reduced vibrations and resulting reduced wear while maintaining significant lateral rigidity based on the combination of features. This combination is not suggested by Olley and is not suggested by the prior art as a whole.

New claim 24 includes the arrangement of multiple shock absorbers on the same strut in combination with the four-point twistable connection to the vehicle axle and the vehicle body in combination with axle struts and first and second spring assemblies and in combination with the first and second shock absorbers. This again provides significant improvements as to vehicle dynamics lowering vibrations and wear and increasing lateral rigidity. Olley again fails to suggest this combination particularly with the other features as claimed. In Olley the coil springs 27 and 28 and the shock absorbers 31 and 32 are arranged at a single actuation region and are not spaced apart as claimed. Further there is no teaching of providing the arrangement as specified in claim 24.

New claim 25 presents the subject matter of allowable claim 18. As such, it is Applicant's position that new claim 25 is in condition for allowance.

In view of the combination of features claimed it is requested that the Examiner favorably reconsider the claims as now presented.

Respectfully submitted  
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Enclosed: Request to Charge Deposit Account

DATED: March 18, 2003  
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SHOULD ANY OTHER FEE BE REQUIRED, THE PATENT AND TRADEMARK OFFICE  
IS HEREBY REQUESTED TO CHARGE SUCH FEE TO OUR DEPOSIT ACCOUNT 13-  
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Hon. Commissioner of Patents  
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REQUEST TO CHARGE DEPOSIT ACCOUNT

In the above matter The United States Patent and Trademark Office is hereby requested  
to charge deposit account 13-0410 as follows:

\$90.00 for 5 claims in excess of twenty under fee code 1201.

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